

IN THE CLAIMS

Please amend claims 1-4, 9-14 and 17-23 as indicated below.

Please add claims 24-26 as indicated below.

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (currently amended) A method of applying a ~~stable~~ conditioning effect to a substrate so as to modify the surface properties of said substrate, the substrate comprising a cross-linkable material substrate at an external surface or an internal surface or at both external and internal surfaces, said conditioning effect comprising exposing the substrate to a two step ~~the treatment steps~~ sequence of:

(i) a first treatment step in which cross-linkable ~~cross-linking of the material at~~ of either the exterior surface or any internal surfaces surface of the substrate, or ~~cross-linking the cross-linkable material of at both surfaces is subject to cross-linking~~; and

(ii) a second treatment step of plasma modification of, or plasma deposition onto[[,]] ~~the cross-linked material~~ cross-linked in step (i);

wherein the cross linking of the material in step (i) can optionally be performed by plasma modification.

Claim 2 (currently amended) A method of applying a ~~stable~~ conditioning effect to a substrate, so as to modify the surface properties of said substrate, said conditioning effect comprising exposing the substrate to ~~the~~ a two step ~~treatment steps~~ sequence of:

(i) a first treatment step comprising cross-linking of ~~the~~ material of either the exterior surface or any internal surface of the substrate, or cross-linking ~~the~~ material of both surfaces[[,]] by plasma modification; and

(ii) a second treatment step comprising plasma modification of, or plasma deposition onto[[,]] ~~the cross-linked material~~ cross-linked in step (i).

Claim 3 (currently amended) A method according to claim 1 wherein a precursor gas or liquid is used in the generation of the plasma in either or both of the first treatment step (i) or the second treatment step (ii), said precursor gas being a noble, inert, oxygen containing or nitrogenous gas.

Claim 4 (currently amended) A method according to claim 3 wherein the material substrate is modified in the first treatment step (i) to form a hydrophilic layer with the plasma modification or plasma deposition in the second treatment step (ii) acting to oxidise or nitrogenate the hydrophilic layer.

Claim 5 (previously presented) A method according to claim 4 wherein the precursor gas or liquid used in the second plasma treatment step (ii) are chemical compounds containing oxygen or nitrogen.

Claim 6 (previously presented) A method according to claim 5 wherein the hydrophilic layer is oxidized using ozone.

Claim 7 (previously presented) A method according to claim 3 wherein the precursor gas or liquid used for the plasma modification or deposition treatment in step (ii) contains fluoride.

Claim 8 (previously presented) A method according to claim 3 wherein the precursor gas used produces a non-equilibrium plasma generated by a radio frequency, microwaves and/or direct current.

Claim 9 (currently amended) A method according to claim 8 wherein the power applied to generate a plasma during the first treatment step (i) is in the range of 0.01 watt to 500 watts.

Claim 10 (currently amended) A method according to claim 8 wherein the power applied to generate a plasma during the second treatment step (ii) is in the range of 0.01 watt to 500 watts.

Claim 11 (currently amended) A method according to ~~claims 9 and 10~~ claim 9 wherein the power applied during either or both of the first treatment step (i) and the second treatment step (ii) is pulsed.

Claim 12 (currently amended) A method according to claim 3 wherein the precursor gas or liquid introduced during either or both of the first treatment step (i) and the second treatment step (ii) is introduced in a pulsed fashion.

Claim 13 (currently amended) A method of applying a ~~stable~~ conditioning effect to a ~~crosslinkable~~ cross-linkable material substrate to modify the surface properties of said material substrate, said substrate being defined as any article capable of supporting a coating applied thereto and comprising cross-linkable material at an external surface or an internal surface or at both external and internal surfaces, said conditioning effect comprising exposing the substrate to ~~the treatment steps~~ a two step treatment sequence of:

(i) a first treatment step comprising cross-linking of the material of either the exterior surface or any internal ~~surfaces~~ surface of the substrate, or cross-linking the material of both surfaces; and

(ii) a second treatment step comprising plasma modification of, or plasma deposition onto[[,]] the ~~cross-linked~~ material cross-linked in step (i);

wherein the cross linking of the material in step (i) can optionally be performed by plasma modification.

Claim 14 (currently amended) A method according to claim 13 wherein the substrate is a porous article[[,]] having a bulk matrix and pores extending from the exterior surface into the bulk matrix, said bulk matrix exterior and interstitial surfaces, at least in part, being polymeric or oligomeric.

Claim 15 (original) A method according to claim 14 wherein the bulk matrix is a polyolefin.

Claim 16 (previously presented) A method according to claim 15 wherein the bulk matrix has a void volume up to 99%.

Claim 17 (currently amended) A method according to claim 13 wherein the first treatment step (i) is controlled such that the effect of said step is controlled to be applied to a limited depth of the material below the external surface.

Claim 18 (currently amended) A method according to claim 13 wherein in the second treatment step (ii) the effect of said step is controlled to be applied to a limited depth into the material below the external surface of the substrate.

Claim 19 (currently amended) A method according to claim 13 wherein the plasma used in either or both of the first treatment step steps (i) and the second treatment step (ii) is selectively applied to localised areas across the substrate surface and/or below the substrate surface.

Claim 20 (currently amended) A method according to claim 13 wherein the material is an absorbent, hydrophobic polymer which is heated during the first treatment by step (i) to be cross linked by a noble gas plasma to improve its ability to retain liquid ~~and render it superabsorbent by being able to retain more liquid than the material would be able to without cross linking.~~

Claim 21 (currently amended) A method according to claim 20 wherein the material is modified by a subsequent nitrogenating plasma as the second treatment step (ii) to render said cross linked polymer compatible with amine functionalities and have to ~~form a super-absorbent polymer with~~ improved capabilities of retaining amine containing aqueous solutions.

Claim 22 (currently amended) A method according to claim 1 wherein the substrate is a ~~superabsorbent material~~ water absorbing resin.

Claim 23 (currently amended) A substrate having a modified surface, said surface being modified by the method as set out in claim [[1]] 26.

Claim 24 (new) A method according to claim 10, wherein the power applied during either or both of the first (i) and the second step (ii) is pulsed.

Claim 25 (new) A method according to claim 1 wherein in the step (i), cross-linking is effected throughout the material below an external surface of the substrate.

Claim 26 (new) A method according to claim 1 wherein the step (i) is controlled so that cross-linking is applied only to a limited depth below an external surface of the substrate.